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ABSTRACT

This paper addresses the need for educators and librarians to guide students in using the World Wide Web appropriately by teaching them to evaluate Internet resources using criteria designed to identify the authoritative sources. The pros and cons of information commonly found on the Web are discussed, as well as academic Internet subject or resource guides, search engines, and if and how Web sites are evaluated by search engines. A five-criteria evaluation tool for traditional print resources is applied to Web resources; these criteria are accuracy, authority, objectivity, currency, and coverage. Additional suggested criteria include content, organization, accessibility, and search capabilities. Citation of Web sources is covered, including MLA- and APA-style citations. Relevant Web sites are noted throughout. (DLS)

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Guiding Students in Using the World Wide Web for Research

Kristin Kubly

ED 430 519

- Abstract
- Endnotes
- Reference List

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Abstract

With the growth in popularity of the World Wide Web in the past few years, many students see this new format as a one-stop-shopping place for information and research. While there is some excellent information to be found on the World Wide Web, there is also a great deal of material that would not be suitable as a source for a college paper. It is important that educators are able to guide students in using the World Wide Web appropriately by teaching them to evaluate Internet resources using criteria designed to weed out the authoritative sources.

The World Wide Web, with its ease of use and graphical savvy, has quickly become a favored method of research for many college students. Using one of the numerous Web resource guides or search engines available, it is fairly easy to find at least some information on almost every conceivable subject without a great deal of traditional library research. However, this accessibility of information is not without its problems. One major issue for educators is whether students are able to determine the quality of the information they are accessing.

Much of the information available on the Web has not had the rigorous editing and verification of facts through which traditional print or even commercial electronic information sources must go. In general, information gets filtered one of three ways. Sources published by authoritative sources such as the federal government or a well-known organization are accepted at face value to be valid. Information that has gone through some type of editorial or peer review and published in a reputable journal is also widely considered of good authority. Finally if it is evaluated by reviewers and/or librarians, users tend to trust the information.1

Therefore, when students use their college library, they know that the information contained within its walls has been evaluated by a librarian, and is considered a reliable, informative source. When a database is searched for articles, only journals that are considered professional or scholarly are usually indexed. There are none of these filters on the World Wide Web. Libraries may make the Web available to their patrons, but there is no way to control the information that is accessed by it.

Because of this, it is crucial that students are able to evaluate the information on the Web for its quality and veracity. Therefore, educators must be familiar with the kind of sources out on the Web, and themselves be able to identify which are legitimate so that they may guide students in using the Web for research.

To be a critical World Wide Web user, one must first be aware of the strengths and weaknesses of the the Internet. For example, the Web is a very good place to find basic factual information such as financial statistics or the address of a member of Congress. It also tends to be more current than print

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sources, so it is an excellent place to go for very recent or even breaking news stories. Its ability to expand a library's resources beyond what it physically contains is another strength. For example, much of the government information that smaller libraries did not have the room for is now available for anyone to find.

For in-depth research, however, the Web generally offers little that would be of value. Information on the Web often comes in bits and pieces, much of which is of questionable authority. There is also a great deal of misconception about just what type of information is available on the Internet. In general, copyrighted material is not available. This includes the full-text of most journals and copyrighted books or similar material. Some older books in the public domain are available full-text, and some magazines and journals do allow access to some of their articles. But the vast majority of information on any given subject will not be found on the Internet for free. Students just learning to do research need to realize that the Web is not a substitute for the library.

However, knowing that many students will start their research with the World Wide Web anyway, some librarians have attempted to guide students to authoritative online documents by creating their own subject guides to Internet sources. These guides contain lists of Web sites that have been examined and evaluated by trained librarians, and are considered useful for student research. These are often excellent places to start finding information on the Web. Many also contain bibliographies of traditional print sources that should also be consulted in order to remind students that not everything is available online. Most academic library Web pages have some sort of subject guide to the World Wide Web, or at least contain links to other sanctioned guides that are academic in nature.

Yet not every student looking for information will begin with an academic Internet resource guide. They must learn how to judge whether the sources they find elsewhere are credible or objective. Especially when searching for information on explosive issues such as abortion or racism, students using documents on the Internet need to be aware of slanted viewpoints or questionable statistics.

So how do we teach students to be critical users of the Internet? First, it is important to know how most people go about looking for information on the Web. One of the easiest and most popular ways to find information on a subject is to use one of the many search engines now available. These searchable databases of Web sites will scan the Internet for key words and produce a list of sites that contain those words prominently on the page. However, Internet novices (and even more experienced users), may have a false assumption about search engines, thinking that results generated by a search engine have undergone some type of filtering process. In general, this is not the case. Most automated search engines look only for keywords which is not the same as evaluating.

There are three separate components to a search engine: the selecting function which identifies and gathers Web sources, the compiling function which stores and makes these sources accessible, and the searching function which determines the access points for retrieving Web pages.2 The selecting function may have some evaluative components. On some search engines, people must register their sites and have someone else decide whether to include them. Yahoo! (http://www.yahoo.com) uses this method to decide which sites to include in its index. This is a much more selective process than that used by many search engines such as Lycos (http://lycos11.lycos.cs.cmu.edu/) which is more comprehensive in its coverage, but does no evaluation of what it has included.

Other search sites such as Magellan (http://www.mckinley.com) have human evaluators rate pages against a specific set of criteria to determine their reliability and usefulness. These criteria include depth (is the site comprehensive and up-to-date?), ease of exploration (is the site well-organized and easy to navigate?), and "net appeal" (is the site innovative or thought-provoking?).3 Magellan then gives one to four rating points or "stars" to the site, with four stars being the best. A similar rating organization is the Point Corporation (http://www.pointcom.com/) which evaluates sites on a scale from one to fifty points. Their criteria is content (how broad is the information; is it accurate, complete and up-to-date?), presentation (is the site attractive and easy-to-use?), and experience (is the site fun and worthwhile?).4 Web site developers whose pages are given high scores by these rating systems may put Magellan's or Point's "seal of approval" on their home page, so that users may know that the site has been evaluated and rated a high score.

Organizations such at Magellan and Point Corporation have made a good start in evaluating Web sites. However, their approach is to rate sites for the general public, not for those seeking to do serious research. As yet, there is no real scholarly criteria for Web sites. So even though a site is considered to be attractive and have "net appeal" by a rating system, it does not mean that the information contained in the site is necessarily appropriate for a college-level paper.

So how does one tell just by looking at a Web page whether it is an informative, reliable site? In general, one can evaluate a Web site in the same way a print source would be evaluated, with some minor adjustments.

Tate and Alexander5 have developed a lesson plan for teaching students critical evaluation skills for World Wide Web resources. In it, they discuss the five criteria used for evaluating traditional print sources and how these criteria may be applied to Web sources. These traditional criteria are accuracy, authority, objectivity, currency, and coverage.

Accuracy and authority are generally interrelated. If a Web site was produced by an authoritative source, it is much more likely to be accurate. However, determining the authority for Web sites is not always easy. Even if the author's name is listed, there may be no more information about him or her. Another important point to remember is that the person's name at the bottom of a Web page may or may not be the author, but may simply be the Webmaster who has only the responsibility for maintaining the site, not actually writing the material. There should also be a way to contact the author, either through email, a phone number or an address.

Preferably there should be biographical information about the author either on the same page, or linked to the page so that one may ascertain what the credentials of that person are. If there is no such biography, the user can sometimes tell if the author seems credible through the knowledge of pertinent theories or schools of thought discussed in the text, citations to reliable sources, or if it is a controversial topic, the acknowledgement of other opinions.6

The body that sponsors the site should also be clearly indicated. Again, the site's domain name may simply be that of an Internet presence provider which has no responsibility for the content of the site. There should be a name of an organization clearly presented on the document, either in the header or footer, with a link to that organization's home page. The relationship between the sponsor of the site and the author should also be clear. Is the author a representative of the organization, or is the document merely residing on the group's Web site? If the author or sponsoring organization is difficult to determine, the quality of information should be questioned.

Objectivity seems to be much more of a problem on the Web than in traditional print sources. Because it is so much easier to publish on the Web, many groups who previously had no publishing outlet now find it easy to use the Web as a "virtual soapbox."7 If the sponsoring organization is not well-known, one should look in a secondary source to find out what the institution is. If the organization is known, the reader should think about what type of group it is, and if it is an objective source. If there is still a question, the information should be verified by looking in another reliable source.

Currency is usually touted as one of the Web's strengths. It is much easier to keep online information up-to-date than print sources. However, not all Web pages have dates, so it is sometimes difficult to determine how current the information is. And if a date is included it could be the date the page was originally written, the last update, or the date when it was made available on the Web. A good information source will always put a date, usually at the bottom, and clearly define what the date indicates. If no date is given, the directory in which it resides may be viewed in order to read the last date of modification.

Finally, coverage is important to note as well. Does the site have the same coverage as similar print sources? Are the topics covered by the Web source noted on the site's main page? Many Web sources contain links to related information or cited sources. Do these links work, and what types of sources do they access?

Library Journal uses some additional criteria when evaluating Web sites for their WebWatch and Infofilter projects.8 The Infofilter Project involves a group of reference librarians who are attempting to apply time-tested methods of reviewing information sources to the Web. (See the site: http://www.kcpl.lib.mo.us/infofilter.htm for more information). WebWatch is a regular column in Library Journal, which offers tips on useful Web sites. Some of the criteria used at these projects include content, organization, accessibility and search capabilities.

Content is obviously the first thing one should look at when evaluating a Web source, but surprisingly many sites are taken at face value. Users should carefully examine the information to decide if it is useful and accurate or if it seems to be doubtful or repetitious. A dead give-away to a questionable source is poor spelling, grammar and literary composition. These are the hallmarks of an amateurish Web page. The graphics should also be appropriate for the content, and not over-used. Students may get distracted by cute graphics rather than concentrating on what the actual content is saying.

Organization of Web sites continues to be a problem as inexperienced Webmasters create pages which are cluttered and difficult to use. The important information should be easy to find, and near the top of the Web site. Pertinent information should not be buried beneath several layers of links, and each page should have some way to return to the home page.

Accessibility is also a constant problem on the Web. Sites should consistently be available for verification and have a good response-time. If the pages are heavy on graphics, a text-only alternative should be available. If a Web document is used as a reference for a paper, the student should double-check the page before citing it to make sure that the information still exists in the same format, and that the link has not gone dead. The date that the page was visited should be noted in the citation.

Large sites with a great deal of information should also have a search engine available. It should instruct users how to use it, and have Boolean capabilities with an output that is logical and easy-to-understand. While having a search engine does not indicate whether the information is any better than a site that does not have one, it does make it easier to go back and find specific pieces of information for later verification.

So once a student has found some documents on the Internet that they feel are good, authoritative sources, how do they then cite this information in their paper? If a traditional paper version of the source is available, it is usually best to cite that version because it cannot change the way electronic sources can. If the source is only available online, it is important to provide as much information as possible to accurately identify the source.

The format is generally the same as it is for printed publications, along with some additional information to show in what medium the information was accessed and its availability. There is not yet one definitive method for citing Internet documents, but there has been some consensus on the basic format. Janice R. Walker of the University of South Florida, has developed some guides to citing many types of electronic resources such as Web sites, FTP sites, Telnet sites, gopher sites, etc. These have been endorsed by The Alliance for Computers and Writing and have gained wide acceptance. The following is how to cite a Web page from her "MLA-Style Citations of Electronic Sources":9

Author's Lastname, Author's Firstname. "Title of Document." Title of Complete Work (if applicable). Version or File Number, if applicable. Document date or date of last revision (if different from access date). Protocol and address, access path or directories (date of access).

For example, the citation to this author's Web site on finding company information if accessed on February 20, 1997 is:

Kubly, Kristin. "Finding Company Information." The Business Page. January 16, 1997. http://frank.mtsu.edu/~kkubly/company.html (February 20, 1997).

The Publication Manual of the American Psychological Association has not yet addressed the issue of Internet sources. Walker has developed the following guide based on the APA style which has also been endorsed by the Alliance for Computers and Writing:10

Author's Last Name, Initial(s). (Date of work, if known). Title of work. Title of complete work. [protocol and address] [path] (date of message or visit).

The above citation in the APA style would read:

Kubly, K. (1997). Finding Company Information. The Business Page. http://frank.mtsu.edu/~kkubly/company.html (February 20, 1997).

There are other guides to citing Internet sources available on the World Wide Web. One useful source is the ISO 690-2 Standard for Bibliographic References to Electronic Documents.11 Their format is slightly different from the above styles, but it addresses other types of electronic information such as online information databases and computer disks. The standard can be found at http://www.nlc-bnc.ca/iso/tc46sc9/standard/690-2e.htm.

Other useful Web pages on this issue include:
Citation Style for Internet Sources: http://www.cl.cam.ac.uk/users/maw13/citation.html
Citing Electronic Information: http://www.pnl.gov/ag/refs/electron.html
How Do You Cite URL's in a Bibliography?: http://www.nrlssc.navy.mil/meta/bibliography.html

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